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## Synopsis of North American Amaranthaceæ. II.<sup>1</sup>

EDWIN B. ULINE AND WILLIAM L. BRAY.

ACNIDA L. Sp. Pl. 1027. 1753.

Flowers completely dioecious, the pistillate ones without calyx, the staminate ones with 5 equal oblong sepals and 5 stamens: otherwise like *Amaranthus*.

At the time of the publication of Linnæus' *Species Plantarum*, but a single species of this genus was described, namely, *A. cannabina*. The specimen was collected in Virginia and was described in 1741 by Dr. John Mitchell under the generic name *Acnide*. Dr. Gray in his revision of the genus<sup>2</sup> states that "on the whole our botanists have failed to make out more than one species," although Moquin-Tandon had already described *A. rusocarpa*. Dr. Gray set up three sections: (1) EUACNIDA, in which he sets apart *A. rhysocarpa* (*A. rusocarpa* Moq.) and adds *A. australis* (*A. cannabina* Chap.); (2) MONTELIA Moq., characterized by its indehiscent utricles, including *A. tuberculata*; (3) PYXIDI-MONTELIA, including *A. tamariscina* (*Amarantus tamariscinus* Nutt. and *Montelia tamariscina* Gray, in part).

With the increasing knowledge of the geographical distribution of the species, and with the considerable additions to herbarium material since Dr. Gray's revision, most of which we have seen, it seems best to indicate a somewhat modified disposition of the species. On the basis of geographical distribution, two very natural groups present themselves, those of the salt marsh and coast region of the Atlantic, and the inland and western forms. The former embraces Gray's EUACNIDA and *A. Floridana* Watson. Of the three species referred by him to this section, we believe that *A. cannabina* and *A. rusocarpa* are not distinct. We find here a complete series of intergradations, while the difference of age actually accounts for more than the difference called for in their original delimitation. The third species of EUACNIDA, *A. australis*, shows no specific departure from the others, but its range is

<sup>1</sup>The first number of this series, presenting the genus *Amaranthus*, was published in *Bot. Gaz.* 19: 267, 313. 1894.

<sup>2</sup>Am. Nat. 9: 487. 1876.

somewhat different, occurring mostly in Florida. This, in view of its comparatively slight variation from the species has prompted us to reduce it to a variety. *A. Floridana* stands as a distinct species. Of the inland and western forms there seems to be but one polymorphous species, consisting chiefly of tall erect plants with small indehiscent utricles (*A. tamariscina tuberculata* Moq.), although the original form of the group is characterized principally by a dehiscent utricle. According to priority these inland forms become *A. tamariscina*.

Finally, there is the definite shading toward *Amaranthus*, which is seen in certain specimens, which seem to defy all attempts at classification. This tendency is seen mostly in the appearance of minute sepals, varying in number. As this is the principal difference between *Acnida* and *Amaranthus*, it would seem that the generic rank of *Acnida* is not yet finally established.

#### SYNOPSIS OF THE SPECIES.

Fruit angled (Atlantic coast).

Utricle fleshy, turning black.

1<sup>mm</sup> long or less . . . . . *A. cannabina australis*.

2 to 4<sup>mm</sup> long, . . . . . *A. cannabina*.

Utricle thin and small . . . . . *A. Floridana*.

Fruit not angled, 1<sup>mm</sup> long (interior).

Utricle indehiscent.

Plant erect, inflorescence spicate, *A. tamariscina tuberculata*.

Plant erect, spikes glomerulate, *A. tamariscina concatenata*.

Plant prostrate . . . . . *A. tamariscina prostrata*.

Utricle circumscissile . . . . . *A. tamariscina*.

#### 1. *A. CANNABINA* L. Sp. Pl. 1027. 1753.

*A. rusocarpa* Mx. Fl. Bor.-Am. 2: 234. pl. 50. 1803.

*A. salicifolia* Raf. Am. Month. Mag. 2: 43. 1817.

*A. obtusifolia* Raf. (and vars.) New Fl. N. Am. 1: 53-55. 1836.

*A. cannabina salicifolia* Moq. DC. Prodr. 13<sup>2</sup>: 278. 1849.

Tall, with leaves long, lanceolate, tapering at both ends: inflorescence naked and slender: bracts short: utricle mostly smooth, but sometimes rugose on the angles, orbicular, turning black in maturity: stigmas spreading: staminate flowers large, characterized by the oblong obtuse scarcely mucronate sepals.—River-banks and salt marshes in the Atlantic Coast Region from New England to South Carolina. Type unknown.

## A. CANNABINA AUSTRALIS (Gray).

*A. australis* Gray (in part), Am. Nat. 10: 489. 1876.

Plant and leaves larger: bracts various, sometimes almost as long as the flower: utricle ovate, smaller than in the species: stigmas divaricate: spikes naked, long, slender and paniculate.—Alabama, Florida, West Indies and Mexico. Gray's types in herb. Gray, Columbia College and J. D. Smith. This variety is intended to embrace all southeastern forms having the above characters, which will give it a somewhat wider scope than the *A. australis* Gray.

2. A. FLORIDANA Wats. Proc. Am. Acad. 10: 376. 1882.

Tall and slender, leaves linear to narrowly lanceolate, obtuse, attenuate to a slender petiole: flowers scattered on very slender, strict, elongated spikes: utricle faintly angled, tuberculate: staminate flowers more crowded.—Chiefly in Southern Florida. Types in herb. Gray, Columbia College, J. D. Smith and National herb.

3. A. TAMARISCINA (Nutt.) Wood, Bot. 289 (1874).

*Amarantus tamariscinus* Nutt. Trans. Phil. Soc. N. S. 5: 165. 1837.

This species possesses in some respects the habit of *Amaranthus græcizans*, having in common with that species slender and acuminate spikes, spinulose bracts and sepals, and a circumscissile utricle.—Indigenous on the dry prairies of the west and southwest, extending northward to Dakota, and occasionally found as far east as Illinois. The staminate forms are not easily distinguished from those of *Amaranthus Torreyi*, whose range overlaps that of this species on the west. The only specimen of Nuttall's type seen by us is a fragment in herb. Columbia College collected by Nuttall in Indian Territory, and labelled "Salt Creek." The specimen is very immature, but the locality, the slender acuminate spikes, and the spinulose bracts enable us to determine its place with reasonable certainty.

## A. TAMARISCINA TUBERCULATA (Moq.).

*A. tuberculata* Moq. DC. Prodr. 13<sup>2</sup>: 278. 1849.

*A. rusocarpa* Moq. l. c.

*A. tuberculata subnuda* Watson (in part) Gray Man. 429. 1889. [ed. 6.]

*A. tamariscina subnuda* Coulter (in part) Mem. Torr. Bot. Club 5: 145. 1894.

Rank tall weed with flexuous branches similar in habit to *Amaranthus hybridus*, having an ovate, tuberculate, indehis-

cent utricle. The spreading bracts and withering stigmas render the utricles somewhat conspicuous when old. This probably accounts for one of the characters on which Dr. Watson based his var. *subnuda*. Those forms of Watson's var. *subnuda* with clustered inflorescence belong naturally with the following variety.—Most abundant in the north central states east and west of the Mississippi, but extending as far as Manitoba at the north, Vermont at the east, Tennessee at the south and western Nebraska at the west. With the exception of ballast specimens from New Jersey no Atlantic coast specimens were seen.

A. TAMARISCINA CONCATENATA (Moq.).

*A. cannabina concatenata* Moq. DC. Prodr. 13<sup>2</sup>: 278. 1849.

*Montelia tamariscina concatenata* Gray Man. 413. 1868. [ed. 5].

*A. tuberculata subnuda* Wats. (in part) l. c.

*A. tamariscina subnuda* Coulter (in part) l. c.

Somewhat weaker, often decumbent, with rather large flowers in isolated glomerules. Though there are occasional transition forms between this and the above, the mass of them seems to form a natural group, which may very conveniently be set apart.—Range as in the above variety. The locality and the aggregate inflorescence point to the probable identity of this with Moquin-Tandon's variety, though in one specimen of *Acnida cannabina*, collected in Massachusetts, the same aggregated tendency was seen.

A. TAMARISCINA *prostrata*, var. nov.

Prostrate and diffusely spreading after the manner of *Amaranthus crispus*, though sometimes ascending as in *Amaranthus deflexus*: leaves small, spatulate: inflorescence crowded in axillary clusters and sometimes in minute glomerules, leafy.—Michigan to Dakota, extending as far south as Missouri. Type specimens in Nat. herb. and Mo. Bot. Gard.

GOMPHRENA L. Sp. Pl. 224. 1753.

Hirsute or villous herbs, erect, decumbent or prostrate, with usually swollen nodes, sessile or short petioled entire leaves, mostly solitary but sometimes clustered heads, which are usually sessile, though sometimes peduncled, perfect flowers, 5-parted calyx often villous at base, and stamen tube 5-cleft with emarginate or 2-cleft lobes, ovules with long strap-shaped funiculus.

\**Stigmas short, stout, nearly sessile: bractlets keeled and slightly crested.*

1. G. NEALLEYI Coul. & Fish. Bot. Gaz. **17**: 349. 1892.

Ascending from a fusiform root, having the habit of *G. decumbens* but easily distinguished by its subsessile stigmas, sepals indurated and more or less united at base.—In addition to the type, which was collected at Corpus Christi by Nealley in 1889, two specimens have been seen: Texas on the Lower Rio Grande (Schott 1853 of Mex. Bound. Surv.); Mexico (Ervenberg 140 in 1858). Type in herb. J. M. Coulter and Nat. herb.

\* \**Stigmas filiform on a long style: bractlets keeled, more or less crested.*

+ *Heads and flowers small.*

2. G. PRINGLEI Coul. & Fish. Bot. Gaz. **17**: 349. 1892.

Plant prostrate, many-stemmed from a long filiform root: stems rose-colored, very slender, dichotomously or trichotomously branched: bractlets broadly and laciniate-crested: flowers very small.—Mexico. Type in herb. J. M. Coulter, with corresponding collection numbers in herb. Columbia College and J. D. Smith.

3. G. DECUMBENS Jacq. Hort. Schoenbr. *pl. 482.*

*G. prostrata* Desf. Hort. Par. app. 219. 1804, non Mart.

Stem procumbent (sometimes nearly erect), much branched, mostly dull gray or brownish in color: heads globose to globose-cylindrical according to age, dirty white or sometimes roseate: bractlets obtuse, keeled and crested, scarcely longer than the obtuse sepals.—Texas, West Indies and Mexico. Type unknown.

4. G. NITIDA Rothr. Wheeler's Rep. Bot. Geogr. Surv. **6**: 233. 1878.

*G. globosa albiflora* Moq. DC. Prodr. **13<sup>2</sup>**: 409. 1849.

Nearest in habit and appearance to *G. decumbens*, but mostly erect (sometimes procumbent), and rather stouter, with heads rather larger and mostly more globular, pearly white or rose-colored, flowers larger with long sharp bractlets and sepals, the former crested and sharply laciniate, one-third longer than the sepals.—Southern Arizona and northern Mexico. Rothrock's specimen no. 520, collected in the Chiricahua Mts., Arizona, in 1874, is in the National herbarium. Moquin's

type is unknown. The original name of Moquin's variety is not retained because of its previous adoption in this genus as a specific name.

A further acquaintance with growing specimens of *G. decumbens* and *G. nitida* may lead to their consolidation, for it is difficult to distinguish them on the basis of general habit. Rothrock, however, says of *G. nitida*, "Certainly it is not *G. decumbens* Jacq., as in the latter only the interior sepals are silky, and the outer ones are obtuse, whereas in my specimens all are silky and acute."

+ + *Heads and flowers large: bractlets broadly crested.*

5. *G. GLOBOSA* L. Sp. Pl. 224. 1753.

Distinguished from the next by its broad leaves, slender fibrous roots, and uniformly globular heads with broadly winged blunt bractlets.—Native of India, introduced into tropical America. Type unknown.

6. *G. TUBERIFERA* Torr. Bot. Mex. Bound. 181. 1859.

Stems erect from a fusiform fleshy and farinaceous root: leaves lanceolate to linear: peduncle elongated, simple: heads globose or oblong-ovate: flowers shining, pale rose-color: calyx about equaling the narrowly keeled broadly crested bractlets: sepals very acute.—On the rocky banks of the San Pedro and other western tributaries of the Rio Grande. Types in herb. Gray, Columbia College and Nat. herb.

\*\*\* *Stigmas filiform on a long style: bractlets thin, keeled, but without crest or lacineæ.*

+ *Stems very long, with conspicuously swollen joints: heads small, often aggregated.*

7. *G. SONORÆ* Torr. Bot. Mex. Bound. 181. 1859.

*G. decipiens* Wats. Proc. Am. Acad. 21: 437. 1886.

Stem tall, jointed, trichotomously branched, from a straight ligneous tap-root: leaves rather narrow, acute, 3 to 6<sup>cm</sup> long, tapering into a winged petiole: both axillary and terminal heads mostly composed of two or three closely aggregated small heads, bractlets keeled, not crested, slightly longer than the sepals, easily deciduous, leaving the woolly flowers exposed.—Southern Arizona and Sonora. Types in herb. Gray, Columbia College and Nat. herb. (no. 1749 *Wright*, collected at Santa Cruz, Sonora).

Torrey's description of *G. Sonoræ* was founded on no. 1749 Wright and certain Thurber specimens of the same vicinity and date. But Wright 1749 was erroneously supposed to have serrate crested bractlets. Drawings on the label of the Columbia College specimen of Wright showing the cristate character must have been based on a Thurber specimen, resulting from confusion of material. The only Thurber specimens seen of that date and locality (1013 and 946) were properly referred by Dr. Watson to *G. nitida*. We have examined numerous other specimens correctly labelled *G. Sonoræ*, all of which agree with the Wright type in the absence of crested bractlets. In consequence of the absolute identity of the type of *G. decipiens* Wats. (Palmer 27 of 1885 in herb. J. D. Smith and Nat. herb.) with these specimens, we have been led to reduce *G. decipiens* to a synonym of *G. Sonoræ*.

+ + Low and cespitose.

8. *G. CAESPITOSA* Torr. Bot. Mex. Bound. 181. 1859.

Very low, white villous, cespitose, spreading with thick woody caudex: leaves obovate, obtuse, the radical with attenuate base, the two caudine subsessile: peduncles short and simple: heads ovate, about 2<sup>cm</sup> long, usually not subtended by leaves: flowers shining, yellowish white: bractlets hyaline, not keeled.—Mountains of New Mexico, Arizona, and Sonora. Types: *Wright*, *Bigelow*, 1752, 1753, in herb. *Gray*, Columbia College and Nat. herb.; *Thurber*, 256 of 1851, in herb. *Gray* and Columbia College; *Capt. E. K. Smith*, in herb. Columbia College; *Schott*, in herb. Columbia College.<sup>3</sup>

*Herbarium Lake Forest University.*

<sup>3</sup>*Gomphrena Tuerckheimii.*

*Telanthera Tuerckheimii* Vatke, Ind. Sem. Hort. Berol. 187-, *sive* J. Donnell Smith.

Tall branching perennial with tetragonal stem: leaves short-petioled, ovate, acute, densely appressed-sericeous below, scabrous above: heads small (less than 1<sup>cm</sup> in diam.), hemispherical: sepals prominently 3-nerved, lanceolate-acute, three times longer than the three equal bracts and the enveloping hairs: stigmas short, sessile, erect.

The above description is based on a specimen in herb. J. D. Smith (Guatemala, Coban, Depart. Alta Verapaz, *Tuerckheim*, 416 in 1885) which he has identified as *Telanthera Tuerckheimii* Vatke. Having seen neither the type nor any published description, we base our conclusion regarding it solely on the determination of Mr. Smith, who evidently thought this to be the same as Vatke's plant. If he is correct, Vatke's species undoubtedly belongs with *Gomphrena*. But if he was mistaken in their supposed identity then our plant becomes a new species of *Gomphrena*.